

REMARKS

Favorable reconsideration of this application, in light of the following discussion, is respectfully requested.

Claims 1, 3-9 and 11-13 are pending in this application.

In the Official Action, Claims 1, 3, 4, 6, 7, 11, and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh et al. (U.S. Patent No. 5,899,350, hereinafter “Itoh”) in view of Nishimura et al. (U.S. Patent No. 5,634,837, hereinafter “Nishimura”); Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Nishimura in view of Tsuburaya et al. (U.S. Patent No. 6,407,500, hereinafter “Tsuburaya”); and Claims 5, 8, and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Itoh and Nishimura in view of Mitsuaki (JP 2000-100358).

Briefly recapitulating, Claim 1 is directed to an image display apparatus. The apparatus includes a vacuum envelope having a first substrate and a second substrate opposed to each other with a gap; a plate-shaped structure arranged between the first and second substrates and fixed to at least one of the first and second substrates; an image display surface formed on an inner surface of one of the first and second substrates; and a plurality of electron emitting elements which are arranged on an inner surface of the other of the first and second substrates and which emit electrons toward the image display surface. The structure has a thermal expansion coefficient 1.02 to 1.2 times as high as that of at least one substrate to which the structure is fixed.

Claim 7 is directed to an image display apparatus reciting a grid having a thermal expansion coefficient 1.02 to 1.2 times as high of that of a rear substrate.

As identified in the Official Action, Itoh does not disclose the thermal expansion coefficient of a plate-shaped structure at all. To cure the deficiencies of Itoh, the Official Action cites Nishimura.

Nishimura discloses a plate-shaped fixing member 58 made of metal (FIG. 13) for fixing a positioning post is fixed to a rear plate 3. Plate-shaped fixing member 58 has a thermal expansion coefficient “approximating” that of the rear plate 3 (column 11, lines 18-21).

The Official Action alleges that Applicants’ claimed plate thermal expansion coefficient (1.02 to 1.2 times the substrate thermal expansion coefficient) is included within the “approximate” range of Nishimura. Applicants traverse and note that, using the logic of the Official Action, the “approximate” range in Nishimura also includes a thermal expansion coefficient range that is 0.98 or 0.93 times (i.e., less than) the thermal expansion coefficient value of the substrate. It is not clear if the “approximate” range of Nishimura results in a plate thermal expansion coefficient that is larger than or smaller than the corresponding substrate thermal expansion coefficient.

In the present invention, it is important that the plate thermal expansion coefficient be slightly higher than that of the substrate, yet as close to that of the substrate as possible, without being lower than that of the substrate. As noted in Applicants’ specification, a plate thermal expansion coefficient slightly higher than that of the substrate ensures that little or no tensile force is generated in the grid, so that welded joints between the grid and the pedestals, or joints between the pedestals and the insulating substrate, are more immune to separation or damage. With a sturdier device, manufacturing failures can be prevented, resulting in improved production yields and an improved device. Details of this feature are found in specification, page 14, line 12 through page 18, line 15. The value of Applicants’ plate thermal expansion coefficient was determined via experiments conducted by the present inventors.

MPEP §706.02(j) notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991). Without addressing the first two prongs of the test of obviousness, Without addressing the first two prongs of the test of obviousness, Applicants submit the claimed invention is not *prima facie* obvious in view of Itoh and Nishimura because Itoh and Nishimura both fail to disclose all of the features of Applicants' claimed invention.

Furthermore, assuming *arguendo* that the 'approximate' thermal expansion coefficient of plate-shaped fixing member 58 is *greater* than that of the rear plate 3 of Nishimura, Applicants submit that Applicants' claimed species is not obvious in view of the conjectured genus of Nishimura. MPEP 2144.08(II)(B) ("Obviousness of Species When Prior Art Teaches Genus") recites that if a *prima facie* case of obviousness is established, the burden shifts to the applicant to come forward with arguments and/or evidence to rebut the *prima facie* case. See, e.g., *Dillon*, 919 F.2d at 692, 16 USPQ2d at 1901. Rebuttal evidence and arguments can be presented in the specification, *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995), by counsel, *In re Chu*, 66 F.3d 292, 299, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995), or by way of an affidavit or declaration under 37 CFR 1.132, e.g., *Soni*, 54 F.3d at 750, 34 USPQ2d at 1687; *In re Piasecki*, 745 F.2d 1468, 1474, 223 USPQ 785, 789-90 (Fed. Cir. 1984). Here, Applicants' rebut any current or future assertion of *prima facie* obviousness in view of Applicants' originally filed specification which

documents the results of extensive experimentation that showed the claimed thermal coefficients provided unexpected results.

MPEP 2144.08 describes that rebuttal evidence may include evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art. Here, as discussed below, it is only through Applicants' extensive experimentation that the benefits of the claimed thermal coefficients relationships, as compared to other relationships, were identified. That is, in an experiment documented in Applicants' specification and related to the invention recited in Claims 1 and 7, it was shown that thermal coefficient ratios of 1.02 to 1.2 demonstrated superior breakage resistance. In contrast, experimental results showed that thermal coefficient ratios lower than 1.0 or greater than 1.7 did not provide the benefits observed when the ratios are between 1.02 and 1.2.

MPEP 2144.08 describes that a showing of unexpected results for a single member of a claimed subgenus, or a narrow portion of a claimed range would be sufficient to rebut a *prima facie* case of obviousness *if* a skilled artisan "could ascertain a trend in the exemplified data that would allow him to reasonably extend the probative value thereof." *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980) (Evidence of the unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain a trend that would allow him to reasonably extend the probative value thereof.). But see, *Grasselli*, 713 F.2d at 743, 218 USPQ at 778 (evidence of superior properties for sodium containing composition insufficient to establish the non-obviousness of broad claims for a catalyst with "an alkali metal" where it was well known in the catalyst art that different alkali metals were not interchangeable and applicant had shown unexpected results only for sodium containing materials); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978) (evidence of superior properties in one species insufficient to establish the non-obviousness of a subgenus containing hundreds of compounds); *In re Lindner*, 457 F.2d 506,

508, 173 USPQ 356, 358 (CCPA 1972) (one test not sufficient where there was no adequate basis for concluding the other claimed compounds would behave the same way). However, an exemplary showing may be sufficient to establish a reasonable correlation between the showing and the entire scope of the claim, when viewed by a skilled artisan. See, e.g., *Chupp*, 816 F.2d at 646, 2 USPQ2d at 1439; *Clemens*, 622 F.2d at 1036, 206 USPQ at 296. Here, Applicants' testing provides evidence of unexpected results of thermal coefficient ratios of 1.02 to 1.2 as compared to other species of higher or lower thermal coefficient ratios, thus providing evidence of unexpected results of Applicants' claimed species of thermal coefficient ratios as compared to the conjectured genus of "approximate" thermal coefficient ratios.

Applicants acknowledge that MPEP 2144.08 also recites that evidence of an unexpected property may not be sufficient regardless of the scope of the showing. This is explained as follows: ***Usually, a showing of unexpected results is sufficient to overcome a prima facie case of obviousness.*** See, e.g., *In re Albrecht*, 514 F.2d 1389, 1396, 185 USPQ 585, 590 (CCPA 1975). However, where the claims are not limited to a particular use, and where the prior art provides other motivation to select a particular species or subgenus, a showing of a new use may not be sufficient to confer patentability. See *Dillon*, 919 F.2d at 692, 16 USPQ2d at 1900-01. Accordingly, each case should be evaluated individually based on the totality of the circumstances. Here, Applicants submit that the claimed invention *is* limited to a particular use (i.e., for an image display apparatus having a vacuum envelope with a first substrate and a second substrate; an image display surface; and a plurality of electron emitting elements). Also, Nishimura provides no rationale for the "approximate" ratio. Thus, Applicants submit that the previously described showing of unexpected results is sufficient to overcome any existing or future assertion of *prima facie* obviousness.

Based upon the foregoing discussion of Applicants' experimentation and corresponding experimentation results, Applicants submit that further rejection of the claims based upon the applied references is an improper hindsight reconstruction of Applicants' claimed invention.

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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